MIXED FLOCK COUNTING

David Fairchild aget. to Dr. Moynihan

June 8, 1960

I. Field Notes.

1. Notes for Chiriquí trip.

Middle Area: area where there were many Brown Caps. Same as the Bend in Road Area. Everything else seems to be clear!

- 2- Notes for Ecuador Trip. useless.
- 3- Notes for Tinamou Ontogeny everything seems to be clear.

II. Data Sheets.

- 1. There were 15 different counts.
 Clearing
- a. Oct. 26 thru Nov. 9, 1959-regular count, before the number system of reaction notation.
- b. Nov. 10 thru Nov. 26, 1959 -- Clearing regular count, with the number system of reaction notation.
 - c. Nov. 27 thru Nov. 28 -- Clearing Behavioural Count in the tangger flocks.
 - d. Nov. 30 thru Dec. 1 -- Frijoles regular count.
 - e. Dec. 2 thru Dec. 15 -- Clearing Regular Count.
 - f. Dec. 19 -- Behavioral Count, in the Honeycreeper flocks.
 - g. Dec. 21 thru Dec. 23 -- Guayacon Honeycreeper count.
 - h. Dec. 30 thru Jan. 19 -- Frijoles regular count.
 - i. March 23 thru March 29 -- Chiriquí regular count, various subareas.
 - j. Apr.12 thru Apr.13 -- Portobelo regular count.
 - k. Jan.7-thru Feb. 19 -- Seedeater count. In envelope.

also:

sl. Dec. 9 thru Dec. 11 -- special count: "When DF followed Palms." see summary envelope for Dec. 11.

- m. m. Dec. 12 thru Dec. 18--special count: "When DF followed Pains." see summary envelope for Dec. 18.
 - n. Nov. 25 -- Naval Reservation, Gamboa, count.
- o. Dec. 16 thru Dec. 18--Clearing regular count, Honeycreeper flocks. See Summary envelope for Dec. 18.

1. Mixed Flocks.

A maxed flock is two or more species in an association either in the same actual tree or in the same volume composed roughly of a sphere fifty feet in diameter., incases where there are no natural foliage breaks.

2. Nucleus of a Flock.

An old term, originally used to mean a species which was joined by the other species of a given mixed flock. Later more definite observation changed this term to mean one species joing another to form a mixed flock when the original species was by itself previously, or when one species joins another species within ten feet. Notation, e.g.: "1.Blue j. Plain-a reaction which was summarized in: "nucleus of flocks" summaries, "joining" summaries, and "following and/or joining" summaries.

2. Group Leader

A now completely obsolete term used only when the first bird in a flkght of a mixed flock was identified. This term is virtually replaced by the "following" term or reaction, once the observer becomes profficient at rapid identification. Notation, e.g.: 2. Gold.

3. Following

When one species actually follows another within thirty seconds in flight, wither from tree to tree or from branch to branch in the same tree--provided the individuals do not appear aggressive to one another. Notation, e.g.: 3. Blue f. Plain.

4. Not Following

When one specites leaves a mixed flock conspiciously, without being followed by any other species. Distinguished from "leaving" by the fact that the Bird flies giving some call notes. Notation, e.g.: 4.Palm.

5. Supplanting

When one species takes the perch of, or lands close to and causes the

Blue Joins plan

Blue Jollows

escape of, -- another species, in an obviously hostile manner. Notation, e.g.: 5. Green -RIH.

6. Leaving.

When one species leaves a mixed flock inconspiciously, ti.e., completely silently--without being followed by any other species. Notation, e.g.: 6. Plain.

7. Intraspecific Contact Fight.

Notation, e.g.: 7. Bananaquit.

8. Abbreviations.

mitrosph-Mitrosphingus sp. or. bill spar.-Grange Billed Sparrow Buffthr .- Buff-throated Saltator BTS-Black Cap S .- Black-capped Saltator BCS-11 RLH-Red-legged Honeycreeper YLH-Yellow-legged Blue Honeycreeper BDac-Blue Dacnis SDAc-Scarlet-thighed Dacnis YTO-Yell'ow-tailed Oriole Y.T. 00 " BTO-Black-tailed Oriole B.T.O. " Variab.-Variable Seedeater VS-WLtan-White-lined Tanager BB-Blue-black Grassquit BBGrass. " " Ban.-Bananaquit YW-Yellow Warbler F.V.U.-Fulvous-vented Euphonia Mask-Masked Tityra CSW-Chestnut-sided Warbler YB-Yellow-bellied Seedeater

IV. Field Techniques

1. Clearing Regular Count Regular Count Old Style Count

This type of count was made by walking around the clearing from the end of the dock to behind the library and over to ZMA, looking for flocks mainly by eye, also by ear, almost never by actual scanning with glasses. When every bird of a given flock had been counted, and the reactions that had taken place during the counting were notated, I moved on to another area and looked for other flocks. No longer than ten to fifteen minutes was spent at one flock-at the most--before moving on. I never counted the same flock more than once within a half hour.

2. Clearing Behavioral Count Behavioral Count New Style Count

This count was made in the same way as the Regular count, only much more time was spent on each mixed flock in order to observe as many reactions as possible. Occarsionally an entire hour was spent with one mixed flock.

3. Guayacon Honeycreeper Count

This was made solely in two trees in the clearing, one of which has been chopped down. I sat and watched the flock in it steadily for four hours in the morning, recounting the contents not more than every fifteen to twenty minutes. Reactions were observed and notated continually, however.

4. Missellaneous "Regular Counts"

These counts were done as closely similar to Clearing Regular Counts as the conditions permitted, i.e., time spent on each flock, time between re-counts, etc.

5. Seedeater Count

This count was made, as is described in the field notes in the envelope, in one small location, where I remained for the entire period of observation. Circulation proved unsuccessful, as the species were too shy and reacted to me at less than seventy feet. Models were always used.

Huvil Fleiles alione Under avi, Horthan Bolinas October - Homenber, 1963.

Hours of observation: 42 /2.

Awage no. I individuals seen in mived flocks per hour: 5,41,

Andividuals seen in mixed flocks as % of relevant total no.

of individuals seen: 63.89%.

Awage no. I highly organized nuved flocks seen per hour: 0.64.

Awage no. I widividuals per mixed flocks seen per hour: 0.61.

Awage no. I widividuals per mixed flock: 5.75.

Largest no. I species per mixed flock: 15.

Awagest no. I species per mixed flock (based on 34 flocks in this case): 3.53.

Largest no. of species in one flock: 8.

TABLE 2.

Mixed Flores above Unduavi, Horthern Bolivias February - March, 1964.

Hours of observation: 23 /2.

Average Mo. of individuals seem per hour: 4.85.

Average Mo. of individuals seem in mixed flocks per hour: 5.74.

Individuals seem in mixed flocks as 70 of referent total nio;

of individuals seem: 43.52 %.

Overage mo. of mixed flocks seen per hour: 0.94.

Average mo. of highly organized mixed flocks seen per hour: 0.46.

Average mo. of individuals per mixed flock: 6.14.

Largest mo. of species per mixed flock: 20.

Average mo. of species per mixed flock: 3,91.

Largest mo. of species in one flock: 12.

TABLE 3.

Wirked Flores below Elndwavi, Horthurin Bolivia, October - november, 1963.

Hours of observation: 193/4.

Average no. of individuals seen per hour: 4.90.

Average no. of individuals seen in mixed floids for hour: 1.84.

Individuals seen in mixed floids as % of relevant total no.

of individuals seen: 23.42 %.

Average no. of mixed floids seen per hour: 0.51.

Average no. of ingliforgannil mixed floids seen per hour: 0.05.

Average no. of individuals per mixed floids: 3,40.

Largest no. of individuals in one floids: 8.

Average no. of species per mixed floids: 2.50.

Largest no. of species per mixed floids: 2.50.

Largest no. of species per mixed floids: 5.

2

TABLE 4,

Mixed Hocho below Undurvi Storthern Bolivia, February-March, 1964.

Howrs of observation: 10/4.

Average no. of individuals seen per hour: 10.34,

Average no. of individuals seen in mused flocks per hour: 6.44.

Individuals seen in mived flocks as % of relevant total no;

of individuals seen: 62.26%.

Average no. of mixed flocks seen per hour: 1.14.

Average no. of highly organized mixed flocks seen per hour: 0.48

Average no. of individuals per mixed flock: 5.50.

Largest no. of individuals in one flock: 11.

Average no. of species in one flock: 2.92.

Largest no. of species in one flock: 5.

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La Maria de la compania del compania del compania de la compania del la compania del la compania de la compania del la compa

Annual of successions: 35.

Annual of successions: 35.

Annual of successions of manager borner: 9.43

Annual of manager of manager of manager borner: 7.83.

Andreaduris seen in munch flowles as 7. & relevant total mos of mativeducies seen; 82.03 %

Annual of most houself borners seen per bower: 0.97.

Annual most most be broken occasional munch flowles seen ner bower: 0.0

Average no. L'individuals per musik flocks seen per hour: 0.63. Average no. L'individuals per musik flock: 8.06. Largest no. L'individuals en oue flock: 24.

Targest no. of species in one flech: 20.

TABLE G.

Northwestern Hopes of Machin Pecelin, Februare, 1964.

Howes of observation: 27/2.

Average mo. of individuals seen per honor. 3.13.

Average mo. of individuals seen in musch floods per honor: 0.73

Individuals seen in musch floods as To of national lotal mo.

of individuals seen: 23.26 %

Average mo. of musch floods seen per honor: 0.22

Average mo. of legille organized musch floods seen per hour. 011

Average mo. of individuals seen per mined floods: 3.33

Kangest mo. of individuals in one floods: 4.

Average mo. of species per mined floods. 2.50.

Langest mo. of species per mined floods. 2.50.

0

TAPLE 7.

Firsts western Ropes of Morlin Perchus, June, 1965.

Howas of observation: 21.

Are was not of individuals seen per bour: 4.38.

Average not of individuals seen for bour: 4.38.

Andividuals seen in nursed flocks as % of interest total not of individuals seen: 41.30%

Average not of mired flocks seen for bour: 0.29

Average not of be alsh organized nursed flocks seen for howe: 0.10

Average not of individuals seen for mired flocks: 6.33.

Forgest not of individuals in one flock: 8.

Averagest not of species for nursed flock: 4.14.

Laugust not of species for nursed flock: 6.

Mund Fleeles at Carpeste Pans, May, 1966

Hours of observation: 25.

Average no. of individuals seen on mayed florers per hour: 9.44

Andividuals near in moved florers as To of total no. of

vindividuals seen: 72.62%

Average no. of myed florers seen per hour: 1.04.

Average no. of highly organized mixed florers seen per hour: 0.64

Average no. of individuals seen per mixed flore: 9.08

Largest no. L'individuals in one flore: 23.

Average no. of species per mixed flore: 5.44

Largest no of species per mixed flore: 5.44

TABLE 9.

Minul Fleries Mar Panas, May 1966.

Average no. of individuals seen per hour: 6.40.

Average no. of individuals seen in never flecks per hour: 1.50

Individuals seen in mined flecks as 70 of total no. of

individuals seen: 23.44

Average no. of never flechs seen per hour: 0.40

Average no. of marked flechs seen per hour: 0.40

Average no. of individuals seen per mired flecks: 3.45

Fargest no. of species per mired flock: 7

Average no. of species per mired flock: 4

Buday the Bellen area, June 154

Hours of observation. 14 1/2 Overage no. of individuals seen per hour: 4.51 Overage no. of individuals seen in fleches per hour i

TABLE II.

Hered Hade man Christoge as Februs in 1964

Howas (alexandration: 13

Avenage Me of individual of All or bour : 5.38

Anchold Me of individual of view in missed (kills gentrous: 0.69

Andividuals seem in missed (kills of bold no of

and individuals seem in missed (kills of

Avenage mo if missed blocks seem por hows: 0,23

Anchold mo of individuals seem por hows: 0,23

Annoed mo of individuals seem pirenthised (kills: 3

Zanged mo of individuals in ore block: 3

Annoed mo of individuals in ore block: 3

Annoed mo of individuals in ore block: 233

Korispit mo of individuals in one block: 3

Thoughtades was Culinut, June, 1984

Mours of cherwalton: 14

Anemage me of individuals seemen land. E-41

Andividuals seem in moved flather as 72 of lotal no. 15

Individuals seem in moved flather as 72 of lotal no. 15

Individuals seem: 61.47

Average me. of mostil freels seemen in the flather of the Average me. I bright organized to the flather of the Average me. I bright organized to the flather of the flather of the Average me. I modified that seem per movie flather 13.15

Language me. of species per movied flather 13.62

Language me. of species in one flather 3.62

TASLE 13

Central Ecuston, all areas apparent, Seutable for Hicko, 1961 111 1966

Hours of clines ton: 111 Overage no: of individuals seemper hour: 11.96 average mos of individuals sur in mirch flocks per heart: 4.35 Quelir iduals seen in mixed fochs as Bol total most undreduals seen: 36.37% arrange no of mired florens seem per hour: 080 average no Sindhiblials sun per nurel flech: 5.43 Largest me: of individuals in one flock: 17 Largest no. of mecies in one flock: 10

Central Eurobor; areas in which Higher, Organizat Hechs Were Seen, 1964 and 1966

Hours of disconsistion. 62 34

Overage no. of individuals seen in movel (levins see how). 6.76

Andividuals Seen in movel (looks as % of total no of individuals seen: 48.04%

Ownage no. of mirel floods seen per hour: 1.16

Ownage no. of highly organized mired floods seen per hour: 6.34

Operage no. of middle organized mired floods seen per hour: 6.34

Operage no. of middle displaced seen per mired (look: 5.99

Largest no. of midwiduals in our flook: 14

Owerage no. of spices per flook: 3.66

Largest no. of spices in our flook: 10

TABLE IS

Hogely Ongoing at Heart How Feet seen 1944 and 1966.

Herns of observation: 48/4

Average Mo. of individuals seen per boson: 8.5?

Average Mo. of individuals seen in mired levilio, per boson. 0.75

Individuals seen in succed levels on For tolar Mo. of

endoudneds seen: 12.33%

Average mo. of mirred levels seen per boson. 0.33

Average mo. of high of opening Mirred flocks seen per lieur. D

Average mo. of individuals in our flock: 4

Average mo. of species per flock: 2.13

Larget mo. of species per flock: 2.13

Larget mo. of species in our flock: 3

Mirred Flocks along Pool to Santa Donningo, Ca. 2757-2833 m. March, 1944

Hours of observation: 14

Average mo: of individuals seen per hour: 17:21

Average mo: of individuals seen in mived fleeles en hour: 80%

Individuals seen in mixed flocks as % of total mo: of

widividuals seen: 31.45%

Average mo: of mixed flocks seen per hour: 1.50

Average mo: of highly organized mixed flocks seen per hour: 0.54

Average mo: of individuals seen got mixed flock: 5.70

Largest mo: of widividuals in one flock: 15

Average mo: of species per mixed flock: 3.67

Largest mo: of species in one flock: 10

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TABLE 14

Fried Frank Mory River to Luite Domingo. CA 2805-2003 m. Getier, 1766.

Norman run of individuals survey them. 15.03

Average run of individuals survey moved ferries per bioner: 8.02

Individuals survey survey ferries for the ferries per bioner: 8.02

Average mo. of married ferries survey form. 1,21

Average mo. of highly organized mired ferries survey fromer: 0.41

Average mo. of individuals survey ferries survey 6.58

Langust mo. of species per survey flech: 4.0

Langust mo. of species per survey flech: 4.0

Mirel Holles at Queen Leptender, 1902

Hours of distriction: 10 34

Orunage No. of institutions seen on service fireless qui barre: 3.26

Orunage No. of institutionals seen in service fireless qui barre: 3.26

Orunage No. of misself leakes seen per horiz: 0.34

Orunage No. of highliorganical russed fortes seen per l'escre: 0.28

Orunage No. of misselficial seen per robad for k: 8.45

Langett No. of misselficial seen per robad for k: 8.45

Langett No. of species per rouse. flock: 5.50

Langett No. of species in one flock: 9.

Thurse Leville at Spices, Chank, 1905

Hours of olisan - lion: 13%.

Avenage more of individuals seen for hour: 12.81

Avenage more of individuals seen in marked blocks for leaver: 4.81

Individuals seen in marked blocks as To eftotal more of individuals seen; 24.31 To

Avenage more of mined blocks seen from boure: 0.45

Avenage more of highly organized mined flocks seen from boure: 0.30

Avenage more of individuals seen for marked block: 6.50

La rock more of individuals arose flock: 12

Avenage more of species in one flock: 6.

Munice Hocho at Quesca. Aug. st., 175 5

Howers of observation. 4/4

Average no. of individuals seen in merch flocks per become 2 27

Individuals seen in mixed flocks as % of total no. of
individuals seen: 19.74%

Overage no. of mixed flocks seen per hour: 0.41

Average no. of highly organized Nursed flocks seen per bows: 0.14

Average no. of individuals seen per mared flock: 5

Largest no. of individuals in one flock: 8

Outrage no. of species per nursed flock: 4.33

Largest no. of species per nursed flock: 4.33

Theret Hereks on Kinzentaura sirese Bayeta, april, 1265.

Howas (Absentation 31 %)4

Change of mo. of a decide sure of march leader per hour. 2 23

Onder Ideals sum in murch leades as % of lotted no. of

undered vala sum: 24.24 %

Change no. of mised leades sum per leave: 0.59

Change no. of high-browned decide sum per leave: 0.59

Change no. of high-browned decide sum per hour: 0.14

Changet no. of molandrais in one feels: 4

Changet no. of molandrais in one feels: 4

Changer no. of molandrais in one feels: 5

Mired Hourson Mountains above Bogota august, 1865

Hours of observation, 11/2 Owerner mo. of individuals sun per hour 12. Olverage no. L'individuals sent in mirellers per hor 2. 4 52 Individual seen in mired Joseph as to of tetal hims of videre luels seen: 36.96 % aumage mos of mirel flochs seen per hour 0.87 average mo, of highly organized now. I feether sam per hours & 52 amende no. & undtributedo in ou fleix: 5.10 Largest no. of instivisticals in orioteoile: 12 andrage mo. of species permissel book : 3.30 Langest no. & specus in one flothe: 8

(de)

TABLE 23

Fired English and and Just, 1845

Howard Stranger 214

Churage Mr. Studies will seen per hour. 8.24

Churage Mr. Studies will flower on 70 State mer of

Endinduals seen in municiples on 70 State mer of

Endinduals seen. 68.29 75

Churage Mr. Schured flows seen per hour. 8.36

Churage Mr. Schured flows seen per hour. 8.36

Churage Mr. Schustellands in one flock: 13.64

Fargat Mr. Sudividuals in one flock: 86

Churage Mr. Sudividuals in one flock: 864

Langest Mr. Haplace in one flock: 8164

TABE 24

Mired Heales at agua Borneta, august 1965

Hower of observation: 13

Awrence Mr. of individuals seen on menel (Coche pen bour: 9.3)

Andividuals seen in mured flocks as % of total me. of

andividuals seen: 40.35%

Average mo. of mired flocks seen pen hour: 1.23

America mo. of mired flocks seen pen hour: 0.85

America mo. of individuals in our flock: 4.56

Largest mo. of individuals in our flock: 19

Average mo. of ancies per mired flock: 4.50

Largest mo. of species in our flock: 19

0

TABLE 25

To well thereto on the Emyor Dural 1965.

Moved Alacha on Peer Esperge, acquest-lightenever, 1755

Howes of observation: 14 1/2

Average mo, of individuals sum per hour: 9.17

Average mo, of individuals sum in mined leads per hour: 4.24

Individuals sum in mixed feeles as % of lotal mo: of

undividuals sum: 48.95%

Average mo. of mined flools sum per hour: 0.76

Average mo. of individuals in one flools: 9.35

Largest mo. of individuals in one flools: 3.91

Largest mo. of aprecis per mixed flools: 3.91

Largest mo. of aprecis in one flools: 15

Provide Herbert Sandy Sport 1755

Howers of observations; 9 %.

Average mo. of independents seed in mineral feeles gas hour: 2.87

Andividuals seem in Mineral flechs as to of tetal no. of

individuals seem. 34.57%

Average no. of mineral freshs seen for horer: 0.61

Average no. I highly organized mineral fook: 4.67

Average no. I individuals in our flock: 6

August no of individuals in our flock: 6

August no. of species per mineral flock: 2

Langest no. of species per mineral flock: 2

Munch Floring at La Regra, August September 1725

Hours of observation. 11/2.

Average Mo. of individuals seen on mixed feeds gentioner. 3.9/

Andividuals seen in mixed flowers on % of total monof

individuals seen: 43.34%

Average Mo. of mixed flowers seen gentioner. 0.94

Average Mo. of individuals in one flock: 6.18

Langut Mo. of individuals in one flock: 15

Average Mo. of species per mixed flock: 3.25

Langut Mo. of species per mixed flock: 3.25

Langut Mo. of species per mixed flock: 3.25



TALLE 27

French Hickort Berninder describer, 125

Howard observation - 8/4

Average mo. Revolutedwals seen perhanse - 18.06.

Cherica me. Rendredwals seen to make blocks perhanse 15 03

Individuals seen in musel feelus of 2 of 2 to line of wedindrals seen. 83. 87 %.

Average mo. Rendred blocks seen per hour - 1.09

Average mo. Rendredwals in one flood. 13.78

Langut mo. Rendredwals in one flood. 13.78

Langut mo. Rendred was feele: 76

Average mo. Rendred was feele: 11

Merch Hooks at San Lorenzo, august, 1754

Hower of showing tion. 33 14

Churas, mo. of individuals seen in mixed laws per hour: 647

Andrilduals seen in mixed blocks as 6 of to tak mo of

individuals seen in mixed blocks as 6 of to tak mo of

and individuals seen: 69.08%

Churage mo. of mixed blocks seen per hour. 5 23

Churage mo. of highly dropping all mixed bodies seen per hour. 0.44

Churage mr. of individuals in one flock: 4.82

Largest mo. of individuals in one flock: 32*

Carrage mo. of species per mixed book: 4.43

Largest mo. of species per mixed book: 4.43

* This flock included a particularly long group of individuals of Chlorophomia symma.

Mirech Hering, Joy and West (Common) Sede Parace & Ellays

Rower of shrust ton: 49 %4

Annage Me of individuals seen you hour. 236

Annage Me: of individuals seen in Misself floths for hour: 4.02

Individuals seen in Misself floths as 16 of total me of

individuals seen: 46 25 %

Annage Me of misself flows seen non hour. 0.68

Annage Me. of highly transmisself in indifferent seen per hour: 0.42

Annaged Me of individuals in our flows: 5.88

Langest Me of species per number flood: 3.71

Langest Me. Apicus was flood: 3.71

Hours of observation: 4

Average me. of individuals seen on microx: 9 41

Average me. of individuals seen on microx. Heres per bown: 4.14

Individuals seen in moved flectes on to total me. of

widnesdocks seen: 43.53 %

Average no. of microl flectes seen per form: 0.54

Average no. of begins or seened finds seen per bown. 0.54

Average no. of individuals in one flecte. 12.52

Laught no. of apreces per moved flock: 8.25

Laught no. of apreces per moved flock: 8.25



Would Floring Ent Pilmanan State, Perusa, Ithan 1965.

Florers of observations. 19 %4
Average most modernalists sum an maria decide accidence 10.49
Andreads new in mused blocks as % is takens: hour 10.49
Andreads new in mused blocks as % is takens: of
which ideals new: 90.44 %
Average most force of musical blocks sum for hour: 0.81
Average most busic of remark moved forces sum for hour: 0.81
Average most force of midiriduals in one (look: 11.83
Lovegest most free of midiriduals in one flore: 4.22
Amagest most free is more flore: 4.22
Lovegest most free is more flore. 16.

Mund Hoches, East Phonesopan) Side, Periaa, august 1905

Hours of observation: 13

Overage no. of individuals seen per hour: 14,44

Overage no. of individuals seen in morred flocks per being: 16,38

Individuals seen in musced flocks as To total no: of
individuals seen: 92, 21%

Overage no. of mired flocks seen per hour: 1.08

Overage no. of health organized mired flocks seen per hour: 1.08

Overage no. of individuals in one flock: 15, 215

Langest no. of individuals in one flock: 35

Overage no. of species per mired flock: 9.36

Langest no. of species per mired flock: 9.36

Wheel Fleches in the Northern Part of the Central Cordillera of Colombia July 1965

Hours of observation: 23/2 average no. of individuals seen per hour. 8.36 average no. I individuals seen in mused flocks per hour. 4.85 Individuals seen in mixel flocks as To total no. of individuals seen: 58.16 % average no. of mired flacles seen per hour: 0.04 average no. of highly organized mused floods seen per hour: 0,55 average no. of individuals thou flocks 7.60 Largest no. of individuals in one flech. 20 Average no. of species per oursed free 5.0.

Mired Flores on Manueluna with Walton Cord Viena of Colombia, May 1965

Howes of observation; 29/4

Average Mo. of individuals seen our hour: 8.85

Average Mo. of individuals seen in musel fleens gen hour: 5.44

Individuals seen in musel flocks as % total no. of

undividuals seen: &1.78%.

Average Mo. of mixel flocks seen per hour: 0.42

Average Mo. of highly organized mixel flocks seen per hour: 0.48

Average Mo. of individuals in one flock: 7.62

Largest Mo. of individuals in one flock: 18

average no. of species per mivel flock: 4.57

Largest no. of species in one flock: 13

(KR)

TABLE 34

Mirred Horles on Munchague on the Western Cordillera of Colombra, August 1965

Howers of sure water 18

Average me, of individuals sun in mired flee sa per hour: 8.56

Average me, of individuals sun in mired flee sa per hour: 8.56

Individuals sun in mired flectes as 70 total mo. of

widividuals sun ? 83.08 %

Average mo: of mired flectes seem per hour: 0.21

Average mo: of brake organized mired flectes seem per hour: 0.56

Average mo: of individuals in one fleck: 14.0

Largest mo: of species per mired lock: 7.82

Average mo: of species in one fleck: 17

Mired Gloche at San Devando-La Palma in the Western. Condillera of Colombia, August 1765

Nours of observation: 9/4

Awarage no: Lindividuals sun per bown: 8.32

Awarage no: Lindividuals sun in mixed flocks per bows: 5.54

Audividuals seen in mixed flocks as % total no of

individuals seen: 61.04%

Average no: I highly organized mixed flocks seen per bows: 0.32

Average no: I highly organized mixed flocks: 9.40

Langut no: I individuals in one flock: 20

Average no: I species per mixed flock: 30

Langut no: I species per mixed flock: 5.0

Langut no: I species per mixed flock: 5.0

Morris Flocks over La Cornalenca intti Westerin Cardellera of Colombia. O gred Hory 1965

However of observation: 2012

Average me: of individuals seen for bour: 8.15

Average me: of individuals seen in mired flocks for howe: 6.28

In dividuals seen in mired flocks as 6 total mo. of

individuals seen: 84.43%

Average mo: of highly organized mired flocks: 0.68

Average mo: of highly organized mired flocks: 10.08

Average mo: of individuals in one flock: 20

Average mo: of species for mired flock: 6.15

Languat mo: of species for mired flock: 6.15

Moved Glochs mar da Carpenteria mitti Western Cordillera of Colorulya, August 1765

Mours of observation: 14 1/2*

Average me: L'individuals seen per hour: 11.14

Average me: L'individuals seen per hour: 11.14

Andividuals seen in moved blocks as 20 listed see of

individuals seen in moved blocks as 20 listed see of

Average mo: L'highly organized moved belles seen per hour: 1.04

Average mo: L'highly organized miner block: 7.45

Languat mo: L'individuals in one block: 21

Average mo: L'hydriduals in one block: 21

Average mo: L'hydriduals in one block: 21

Average mo: L'hydriduals in one block: 15

frue different days.

Month Hedes in the Farallones in the Western Cortbellera of Colomora, Alay 1963

Howas of observation; 14/2

Average me of individuals seen per hour: 14 40

Average me of individuals seen in mired blodes per hour. 11.49

Individuals seen in mired becho as To total me of

undividuals seen: 49.46 To

Average me of highly organized nurred flocks seen per hour: 0.91

Average me. of individuals in one flock: 9.14

Zangest me. of species per mired flock: 40

Average me. of species per mired flock: 6.0

Zangest me. of species per mired flock: 6.0

Zangest me. of species more flock: 13.

Moved Flocks in the Paramo Frontewor Bycon of the Western Cordillers of Colombian J. Lyris

Nours of observation: 28

Average no. of individuals sun per hour: 10.61

Average no. of individuals sun in mired flocks per hour: 7.78

Individuals sun in mired flocks as % total no. of

undividuals sun: 43,40%

Average no. of highly organized mired flocks sun per hour: 0.32

Average no. of highly organized mired flocks; 9.08

Largest no. of individuals in our flock: 24

Average no. of species per mired flock: 5.21*

Largest no. of species in one flock: 5.21*

* Based on 19 flocks

Northern Kolivia

SUM TOTAL above Genduran 1203 Hours Spent = 42 /2 Average no: undo seen per hour = 8-94 Olverage no. mids. seen in flexles per hour = 5.41 Juds seen in flectes as To total inds. = 63.29 Average no. flochs seen ner hour = 094 average no. highly organized floiles per hour = 0.61 average no. mids. per flock = 5.75 Laugest no. wids. in one flock = 15 average no. specces per flock = 3. = 3. Laugest no. species in our flock = 2

SUM TOTAL above Hudrand 1964 Mouse offert = 231/2 avenege not indo seen per haver = 7.87 aurage no unds. seen in fleiks per hour = 5.74 Indo. seen in fleches as To total indo. = 43.52 % Churage no. flores seen per hour = 0.94 Average no. bight organized flocks per liour = 0.76 average no. inds per flock = 6.14 Laugest mo, inds. in one florele - 20 Average no. species per flock = 3.71 Largest no. species in one flock = 12

2016 - 626 7 - See - See Total Mourso Sport - 10 Olyunge me, and seen per frus = 6.40 Average me, inde seen in fleche per hour = 1.50 Indo sees in flochious La tetal ends. = 23,44 To Average no. fleche seen per hour = 0.40 average no highly organized florles per hour = 0.10 avenuze mo mids, perflock = 3.75 Laurest me. mids in one flock = 7 auerage no species per flock = 2.45 Largest no. speces in our flock = 4

Carpesti Overa Seren

Duniste Stolent May, 1966 - June Total Hours Spent = 25 average no. unds. seen per hour = 13.00 avenage no. unds. seen in flocks per hour - 9.44 Ands, seen in fleches as To total inch. = "72.62 6 average me flocks seen per hour = 104 average no. highly organized florely per hour = 0.64 average no. mds. gen flock = 9.08 Largest no. w.do. in one flock = 25 average no. specces per flock = 5.44 (based on 25 flocks)

Largest mo, species in our flock = 17

Law and Pargers

Actions 1764 Sun Detail

Yours ipset 17 1/2 (All masses without
Av red Vection)

arising we was seen just being = 4,5% Overege no visto seen in flectic per horry - 0 Juste seen on flower as to total unds. = 0 % aueraze no flecho seen zer hour = 0 Awarageno. highly organized failes pres hours = 0 average no wids. per flack = 0 Largest no. wels. in one flech = 0 average no species per fleche = 0 Fargest no. species in one flock = 0

Florthern Peru

SUM TOTAL. Chackapeyas - Hell alvest town, 1904 Hours Spent = 13 average no: indes seen per hour = 5.38 Average mo, indo seen in flectes per brown = 0 69 Indo, seen in flochs as To letel indo. = 12.86 % average no. flochs seen per hour = 0.23 average no. highly organized fleches per hour - 0 average no. vido. per flock = 3.0 Largest no. mids. un one flock = 5 Averege no, species per flock = 2.33 Largest no, species in one flock = 3

Extreme Houth Peru

501. TOTAL - Caleraro - St. of alletable area with-

Hours Spent = 5 /2

average no indo seen per leour = 2.0

average no. mols. seen in florelis per hour = 0

Inds. seen in flocks as to total wide. = 0%

average no, florers seen per hour = 0

average no. highly organized flectes per hour = 0

aureage no. unds. per flock = 0

Largest no. unds. in one flock = 0

aurrage no. species per flock = 0

Largest no. species in one fleits = 0

SUM TOTAL: Cuterwo - area a leva of losses area -

Hours Spent = 17

avienage no. vido. seen penhour = 6-41

average mo, inds. seen in flecho per l'aux = 3.74

Indo seen in fleches as To total unds. = 61.47 %

average no: florbes seen per hour = 0.76

average no. highly organized fledes per hour = 0.47

auerage mo, mids, per flock = 5.15

Lengert no. mids. one flock = 13

Average no. species per flock = 3.62

Laugest no. speces in one fleck = 8

EM Tork Some Service of and all for

111 Other grave code serreperter + = 11.96 Claring in water seem in franks per Deny = 4.35 Ander seen in flather as to blet with - 36,37 % Olwardy no fleche seen per hour 0 80 aluerage. No. biglily organized flocks per hour = 0.31 annage no mids per flech = 5.43 Largest no. inds. in one flocks = 17 auenage no sperces per flock - 3.38 Largert no. speces in our flock = 10

Geretral Eccaptor Jotal Overs appropriate sustable for first on which highly organize of sales ment and - 1900

Howa Speut = 6234 Cluerage no well 224 per 20 = 14.49 awarege me, unla cora en flerier per trait - 6.96 Ands, seen in floiles as To tetel with - 42.57 / average no. flocks seen per hour = 1.16 Auenaze no. hydely organizal fleches per hour = 0.54 average no. unds per flock = 5.99 Largest no, wids in one flock = 17 average no. years per flock = 3.66 Largest no. species one flock = 10

B. F. John Son Spreadth suitable for Hotles MANOS HEST - 48 /4 among 114 colla 28711 per 6864 = 8,69 Challengy he ando serven for the part from \$ = 0.75 Such seen as flectes as To intal with = 12.33 To accorage no. fleshis seen per hour - 0.33 anny we highly organized flather per hour = 0 allerage no. inds. per flock = 2.845 Fargest no. mols in our flock = 4 annage me. species per flock = 2,125 Langet mo, species in one flock = 3

Central Sandor

Contral Em done 9700 - 9300 ft loud laining any Minute 12, 14, 18, 20, 01 - 1700 2959 - 2835 m

Hours Spent = 14

average mos indo seen per hour = 14.21

Average no. who seem in fixing non-bear = 7 15 Indo seem in flection as To total winds = 51.45 % Average no. flectes seen you bour = 150

average no highly organized fledis per har = 0,04

auerage no. vido. per flock = 5,90

Langert no. unds un on flock = 15

aurage no. species per flock = 3.67

Largest no. species in one flock = 10

G. K. C. Peristan 9307 - 8829 St. Revel (Relow Seen Spean) Whend 20, 21 22 23 - 1966 2803-2083 m

Marca Spect = 14 /2

aperinge mon under seen per hour = 15,03.

Awarasze no. enda. seen in flechs jer hour = 8.6d. Inds. seen in flechs as 2 total cids. = 57.34 % Awarasze no. flechs seen per hour = 1.31

average no. highly organized flothe per bour = 0.41

August no. inds. per flock = 6 58

Largest me. undo. un our flock = 17

annage mo. species per feech = 4.0

Largest no. species in one flech = 10

1/t= 0.305 m. 39.34 w. 1/4:

Santa Marta

SUM TOTAL LOW FEWERS - Quegnet 1964 Mores 4port = 3374 (Delica revisional Barrer) among in the mela- compartion = 9.36 array ner wirls. seen in there gentlers = 6.49 And seen in flexion as % total weds - 69.08 % aurage no. flores seen per hour 0.83 average ner highly organized feels per hower = 0.44 average me: ends, per flock - 7.82 Largest Mt. webs. wi one flech = 32 (Chorophornas) average mes species per fleche = 4.43 Langest mer speces in one flech = 14

Stevera de Marida

SUM TOTAL: Pico Espejo (Stations 1+2) - april 1965 Hours Spent = 23

Ownage mo. unds. seen perhour = 948

average no. ends. seen in flochs zen hour = 4.08

Ands, seen inflochs as to total inds. = 43 12

average no. flocks seen per hour = 074

Average no. highly organized fleils per hour = 0 33

average mo. mids, perflock = 5.53

Largest no. mids one flock = 16

average no menes per florik = 4.00

Largest mo. specces in one flock = 11

· Several de Mesuda SUM TOTAL: Pro-Enjoyer (Stations 1+2) - any tept 190 Words frent=14 m average mo ondo surryer hours = 9.17 Olverage no. undo seus inflactio per hour = 7.24 Inds. seen in flores as To total unds = 77.15 average no. floiles seen per hour = 0.72 average no. brightsorgannel florers per hour = 0.76 Ownage no. unds per flock = 9.55 Largert no. undo our flock = 22

Average no. species per flock = 5.91

Largest no. species in one flock = 15

Accura de Harada

SUM TOTAL: Paramo La Regna April, 1965 Hours Spent: 93/4 average no. indo seen per hour = 8.31 average no undo seen en floches per hour = 2. 84 Judo, seen in flociles as to total unds = = 1 = 1 Overlage no. florens seen per hour = 0.61 average no. highly organized fledes per hour = 0,31 average no. wids. per flock = 4.67 Largest no. inds, in one flock = 6 average no species per fleck = 2 Largest no. species in one flock = 2

· Summer Houselan

SUM TOTAL - Particula de Parque - aug a lepti, 1945 Hours Sport = 111/2 anunay no wide seen pur hour = 13.04 autringe moi unds sur v. flactinger brace = 591 Fush seen in flockes as to total unds = 4 = -4 / awrage no. Seechs seen per hour = 0.26 average mo: highly organized facles per hour = 0.33 awage no mods perflock = 618 Largest no. unds. in one flock = 15 average no. yours perflock = 3,25 Larigent no. years in our flock = 8

· Surra de Miliada

SUM TOTAL: Panamo Zumbador - Sept. 1965 Hours Spirit = 8/4 average no: unds seen per hour = 18,00 average no, unds seen in floches que hour = 15=23 Inds. seen in flochs as To total unds = = = -Average no. flochs seen per hour = 101 annage no. higherorganizel Stocks per hour = 109 average no. unds. per flock = 13.48 Longest no. wids in one flock = 22 arunage mo. spicces per flock = 7.67 Largest no. specus more flock = 11

Eastern Corbiller Colorens

SUM TOTAL: Commente Donaca - September, 1922. Howard 1034 Contingenor into seen per seen - 6, 47 and the month seem in love part freeze = 3,26 grads, seem in Streets as to betal inds. = 17 15% always no flocks seen per trour = 0.34 average no: highly organized floeles seen per hour = 0, 22 Christoge no: wids. perflock = 8.45 Largest no. inds. in one Rock = 16 average no. species per flock = 5.50 Langert noi speciesone Rock = 9

· Eastin Cr. telle - Tre SUM TOTAL. Paramo de Grasca - april 1963 Howe Spent = 13/2 average no ends. seen per hour = 18.81 average no indo seen in flochs per hour = 4.31 Inds. seen in flectes as To total inds. = " Overage no. offerens sun per hour = 6.42 Average no higherorganisel flocles seen per hour = 0.30 average no. mids per flock = 6.3 Largest no. inds in oruglacle = 12 average no speaces per flock = 4.1

Largert no. of species in one flock = 6

Continue Continue Colombia SUM TOTAL Parano de Quesca - august, 1945 Horris y est. 449 average me mids in a per better 10:48 Overage no. indo seen in feels, per hour; 2,27 Freds seen in Rocho as % total undo = 1174 average no. of flochs seen per hour - 041 average no bright organized fleches seen per hour = 0,14 average mo. unds. per flock = 5 Largest no. wito in our flock = 8 average no: of specus per flock = 4.33

Largest no of species in our flock = 7

Eastern Couldtern Commen

SUM TOTAL Phits above Bogota - april, 1965 Hours front = 21 3/4 Overage no. inds seen per hour = 7.22 average no, indo seen in fleicho per hour = 2.25 Indo seen in fleches on to total undo = 2 to 1 average no. floribo seen per hour = 0.59 average mo. highly organized fleches per hour = 0.14 average mo, undo, perflock = 3.77 Largest no; vido, un one flock = 7 average no. species per flock = 2,47 Fargert mo, of species in one flock = 5

Onto in Courtles in Lateraland Acto alise Begeta - august, 1945 SUM TOTAL · HOUND STILL - 17 1-2 antituge mo. wido sun per hour = 12.00 average no. Sunds of a live les per hour = +1,24 Juds. seen en llosses as % lettel undo = average no. flocus seen per hour = 0.81+ average no. highly organized feetles seen yer hour = 0.52 average no. mds. per flock = 5.1 Largest mo, mods. mome fleche - 12

average no. speces per flock = 3.30

Largest no. of spices in one floor = 8

Eastern Contillein Glombin

SUM TOTAL agra Bonita - april 1705 Howes Spert = 814 average no. indo sur per hour = 8.24 average no. undo seen in fleches per hour = 4 ? + Inds. seen in flochs as % total ords. = average no. of flocks seen per hour = 0 31 average no highly organical fleches per hour = 0.36 arringe no inds per flock = 13.67 Largest no. unds mou flock = 26 average no species per flock = 8.67

Largest no. species mone flock = 15

Enstern Condition Colombia

august 1945 SUM TOTAL ague Boreta Wassiste t= 13 average no undo see que hour = 1 = 1 = Owney no undo seen in fle les per broses = 9, 31 Inds seen in glocks as to total unds = average no. of flories seen per hour = 1,23 average no. highly organized fleeles per hour = 0,85 awinge no inds. per flock = 7.36 Largest no. unds in our flore = 19 average no. species in one flock = 4.50 Largest no. mucus in one flock = 11

Central Contilling Colombia

SUM TOTAL: PENNICE - Journ Side + Jop - May 1945

Hours Spect = 4934

average number ands seen per hour = 8.50

average mo. unds. seen in flocks per hour = 4,52

Inds. seen en floches as % total unds = 46 95 %

average no. Stocks seen per hour = 1 18

average no. highly organized flechoper hour = 0.42

average mo. undr. penflock = 5.88

Largert mo. evido one flock = 18

average mo, species per flock = 3.91

Largest nos species nione flack = 10

Control Condition Colombia



SUM TOTAL: PURE - Jour Like Jop - august 1965.
Moura Spirit = 7

Churrage mo such seen per hour = 9,71

average no. unds. seen in florelis per liver = 7.14

Indo. seen in floreles as % to total wids. = 7 = 3 = 7

average no. flestes seen per hour = 0.54

arwage no. buglity organized floches per brown = 0.517

awage no. undo. per flech = 12,50

Largest no. mds. one flock = 22

average no. speak per flock = 3,25

Largest Mr. species in one flock = 13

Central Cordillera Colombia SUM TOTAL: Parace - Mascapainfide - May, 1763 Hours Spent = 1934 Average number ends seen per hour = 11.90 average no. unds seen in Poels per hour = 10 49 Inds. seen infloiles as % total unto = 90 it / average no Jeachs seen perhour = 0.91 average no. higher organized flectes per Gover = 0.21 average mo. ends, perflock = 11.83 Langest no, ends, in one fleck - 28 average no. specus perflock = + 22 Largest mo. species one flock = 16

Contral Condition Colombia SUM TOTAL PROSE - Lise opain feele - august, 1965. Hours Spect - 13 Obverage mension who seems horse = 17.79 average no suds, seen in fleisho gen hover - 16 38 Indo seen in flordies as To total unde - 92 21 7 away no flows sun perbaser-1,08 average me brighty organis & florers seen per bour = 1.08 average no. unds. jer flock = 15,215 Largest No. wids. in one Rock = 35

average no. species gerflock = 9.36

Largest no specus ou lock = 28

Control Costilles Como Medelley aren: Odding Blanco Lauta Elma, Bioquerai de Palimtas SUM TOTAL Lo Montana Estenira etc. Hours Spirit = 23/2 awaye mumber indo seen per brenz = 836 average number inds. seen inflectinger bear = 4, 25 moder seem un floches as to total under = 5% 16 % average no fleches seen ger bour - 0.64 average no. highly organized koches yer Crocer - 0.35 average no suds perflock = 7.60 Fargest no unds one flock - 20 average no species in one flore = 5.0 Largest no, species in our fleile = 16

. Western Couldless Tollow Combra . 30 SUM TOTAL: Allen Grane - Phay 1905 Howes Spect = = 1117 Clurunge munder under neun gert hours = 3,85 autrage no undo seen in Rosche per hour = 5.44 Inds. sun willseles as To total inds. = 111 +11 / Ownage no. flothes seen per hour = 0.172 average no. highly organized fleches per hour = 0,48 Owerage no weds. perflock = 7.62 Largest no. mols. mone flock = 18 annage no, years perflore = 4.57 Largest no, species in our flock = 13

Westerm Condillon Colonia

SUM TOTAL: Munchique august, 1765 Mours Spent = 18

arrivage no inds. secu que hour 10.00

average moi indo seen infloctes per hour = 836

Indo. sun in floreles as to total inds. = 85 3

avenage no. flocho seur per hour = 0.61

average no. highly organized feedles per Gover = 2356

average no: ends per flech = 14.0

Largest no. wids. mone flock = 37

average no. species perflock = 7.82

Largert no. species in one flore = 19

SUM TOTAL Sangura do (La Balma) - august 1965 Hours Spect = 9/4 aviorage mes mets seen per hore - 8132 average no. wids seen in floringer hour = 5.04 Indo seen willown as To total endo. = 6104 & average me flocks seen per hour = 0.54 Overage no. higher organized flochs per hour = 0,32 Average no. mols. per flock = 9,40 Largest no. mels nione flock = 20

Average no species per flock = 3.0 Largest no species wone flock = 10

Western Cordellera Colombia SUM TOTAL: La Cargninteria - (L. Farm) - april May 1965 Hours Spent = 20 /2 average no. mids, seen per hour = 8,15 average no. mds. seen inflocks per hour = 6.88 Ands. seen inflocles as To total wide, = 84.45 % Average no. flocks seen per hour - 0.68 average no. highly organized Stocks per hour = 0.68 average no. mids. per flock = 10.08 Largest no. mids in our flock = 20

average no. species per florite = 6.15

Largest no. species one Rock = 13

(39)

Western Cordellera Colombia



SUM TOTAL: La Carpenteria. august, 1965. Hours Spent: 141/2 (Own 5 days; all p.m.) anviage no. with seen per hour = 11.17 average no. unds. seen in fleche per hour = 10.76 Inds. seen inflectes as To total wids. = 96. 29 To average no. floches seen per hour = 1.10 average no. highly organized flochisperhour = 1.04 average no. wids. per flork = 9,75 Largest No. wids. in one flock = 21 average no. species per flock = 6,81 Largest no, specus ou flock = 15

Western Coelellera Colombia

(40)

SUM TOTAL: Forallones - May, 1265

Howes Spent = 17/2

average no inds seen per hour = 14.40

average no. mids. seen in florelis per hour = 11.49

Ando seen infloches as To total indo = 79. 76 %

average no. flocks seen per hour = 1,26

average no. higher organized floils per bour = 0,91

average mo. wids. perflock = 9.14

Largest no. mids mone flock = 20

average mo. species per flock = 6.0

Largest no. species in one flock = 13

Western Codellera Colombia



SUM TOTAL Northern Part of Western Cordellera of Colombra - July 1965

Hours Spirit - 28 (all marcus with large and for bighly organized flechs)

auenge miniber md. sun per hour = 10,61

Ands seen in floilis as To total inds. = 17.78

Androge no. floilis as To total inds. = 173.40 %

Anierage no. floolis seen jus howr = 0.86

Anierage no. highly organized flock per hour = 0.32

Anierage no. inds. per floik = 9.08

Largest no. molo m one flock = 24

Average no. species per flock = 5.21

(based on 19 flocks)

Largert no. species in one flock = 14